

REMARKS

REMARKS REGARDING THE CLAIM AMENDMENTS:

Claim 2 has been amended to reduce ambiguity regarding the perforation's location at the reduction in cross-section. Claim 4 has been amended to remedy the 35 U.S.C. § 112 rejection of the Action. Claims 8 and 11 have been amended into independent format, but otherwise remain unchanged. New claims 12-17 have been added, and which contain substantially the same subject matter recited in claims 2-7, as a dependent series of claims referring to claim 8.

IN RESPONSE TO THE OFFICE ACTION:

REJECTIONS UNDER 35 U.S.C. § 102:

Claims 1-3 and 9-11 were rejected under 35 U.S.C. §102(b) as being anticipated by Fuhrmann (FR 2751375). This rejection is respectfully traversed on the following grounds.

Initially, it must be appreciated that this rejection of the Action {the section numbered 2 at Page 2 of the Action} is based exclusively on various items of Fig. 2 of *Fuhrmann* (FR 2 751 375). Therefore, for simplicity, that Figure is reproduced immediately below.

2751375

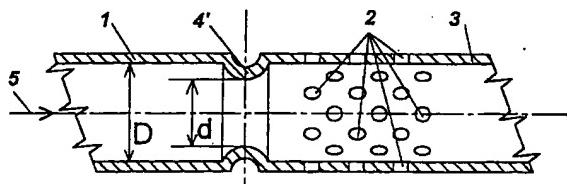


Fig.2

It is reminded that for there to be anticipation under 35 U.S.C. §102, “each and every element” of the claimed invention must be found either expressly or inherently described in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) and references cited therein. See also *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986) (“absence from the reference of any claimed element negates anticipation.”); *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997). As pointed out by the court, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). An anticipating reference must describe the patented subject matter with sufficient clarity and detail to establish that the subject matter existed and that its existence was recognized by persons of ordinary skill in the field of the invention. *ATD Crop. V. Lydall, Inc.*, 159 F.3d 534, 545, 48 USPQ 2d 1321, 1328 (Fed. Cir. 1998). See also *In re Spada*, 911 F.2d 705, 708, 15 USPQ 2d 1655, 1657 (Fed. Cir. 1990).

Further, Applicant assumes that the Action is in compliance with MPEP 706.02 (please see MPEP page 700-20, a copy of which is attached hereto as Exhibit A), and that this choice of prior art {*Fuhrmann* (FR 2 751 375)} is the best available relative to claims 1-3 and 9-11.

Regarding Applicant’s claim 1, it appears that *Fuhrmann* (FR 2 751 375) discloses at 4’ in Fig.2 a restriction (d) when compared to the larger diameters appearing to exist ahead (left-hand side) and behind (right-hand side) the restriction 4’. According to Bernoulli’s Principle, and assuming that fluid is flowing from left-to-right in Fig. 2 of *Fuhrmann* (FR 2 751 375), a lower pressure exists at the restriction 4’ than in the lead-region 1 and/or the trailing region in which it is believed that perforations 2 are located. Clearly, there are no perforations indicated to be located at the restriction 4’ in *Fuhrmann* (FR 2 751 375), and therefore there is no disclosure (either expressly or inherently) of “at least one perforation (14) located at a distance from the outlet end (11) of the conduit and at a point in the conduit (10) with a comparatively lower static pressure than downstream therefrom” as recited by Applicant. Instead, the perforations (2) of *Fuhrmann* (FR 2 751 375) are in an elevated pressure zone compared to the restriction 4’- still

further, there appears to be no disclosure in *Fuhrmann* (FR 2 751 375) of relative pressures between the region containing the perforations and downstream thereof.

Though Applicant does not agree with, and therefore traverses the Action's characterization of the claims 9-11 as being inherent to the structure of Applicant's claim 1, assuming that to be the case, Applicant urges the allowance of claims 9-11 on the same grounds as urged above with respect to claim 1. This is particularly true regarding claim 11 which recites "locating the at least one aperture at a position along the length of the exhaust conduit where a negative pressure is normally developed inside the conduit in comparison to ambient pressure outside the conduit".

Given the above, Applicant requests that the rejection of Claims 1-3 and 9-11 under 35 U.S.C. §102(b) be reconsidered and withdrawn and that the Examiner indicate the allowance of the claims in the next paper from the Office.

REJECTION UNDER 35 U.S.C. § 103(a):

Claims 4 and 5 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Fuhrmann* (FR 2751375) in view of *Okawa et al.* (JP 02173313), and further in view of *Ciapetta et al.* (US 3471265). Claims 6 and 7 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Fuhrmann* (FR 2751375) in view of *Cheng* (US 5,197,509). Claim 8 was rejected under 35 U.S.C. §103(a) as being unpatentable over *Fuhrmann* (FR 2751375).

Initially, it must be appreciated that the mere fact that the prior art may be modified in the manner suggested in the Action does not make the modification obvious unless the prior art suggested the desirability of the modification. *In re Fritch*, 972 F.2d 1260, 1265, 23 USPQ 2d 1780, 1783-84 (Fed. Cir. 1992).

Regarding Applicant's claims 4 and 5, the Action's rejection continues to be deficient regarding the limitations of claim 1 from which claims 4 and depend, and which is argued in detail hereinabove. Moreover, there is no suggestion supporting the combination of the water-absorption based arrangement of *Okawa et al.* (JP 02173313) with *Fuhrmann* (FR 2751375).

Regarding Applicant's claims 6 and 7, and as before, the Action's rejection continues to be deficient regarding the limitations of claim 1 from which claims 6 and 7 depends, and which

is argued in detail hereinabove. Moreover, there is no suggestion supporting the combination of the laminar flow elbow of *Cheng* (US 5,197,509) with *Fuhrmann* (FR 2751375). More specifically, the Action refers to Fig. 2A; Col. 3, line 32 through Col. 4, line 15 of *Cheng* (US 5,197,509) which recites:

"FIG. 2 further illustrates the pressure measurement across the inner and outer wall of an elbow through a liquid fluid at a relatively high speed. The elbow pressure is measured at the locations on the inside wall labeled 1, 2, 3, 4, 5; and on the outside wall labeled as 1, A and 5. Here B coincides with position 3. The cross section AB is shown at the bottom of FIG. 2. The pressure distribution measured was a classical case; for instance, the outside of the pipe on the upper part of the curve, which is normalized by the kinetic head and pressure head, starts at 1, and increases to a higher level at point A. This is due to the stagnation and the centrifugal force, which then accelerates the fluid from A to position 5; therefore, the pressure drops dramatically. This acceleration is due to the contraction of the fluid after the elbow. On the other hand, the pressure distribution on the inside of the elbow turn starts from point 1, gradually decreases to point 2, then to a minimal point 3, then recovers to point 4 and point 5. This low-pressure dip relative to the position at the opposite side, point A, creates a very large pressure gradient, which is the reason the droplets or other particulates can be accelerated by this pressure gradient to hit the wall and cause erosions. Also, the drop in pressure will cause cavitation if the fluid contains low volatile materials rather than a pure gas."

At point 1, the water pressure is high; therefore, it's called subcooled water below the boiling temperature of the fluid. The pressure and the boiling temperature curve is shown as a curve separating the points 1, 2, 3, 4, 5. The points 1, 2, 3, 4, 5 correspond to the points 1, 2, 3, 4, 5 in FIG. 2. When the pressure is dropped from point 1 to point 2, which reaches the boiling temperature of the water under a lower pressure, the water is ready to be flashed into steam, which will continue to drop the pressure to point 3, which is clearly the vapor and steam phase. This is known as cavitation. It could happen not necessarily in a heated water situation. It is also caused by dissolved gas in water. The pressure is then recovered from point 3 to reach the condensation point under a lower temperature at point 4, then point 2. Because some of the latent heat is consumed during the evaporation, the temperature is dropped dramatically from point 2 to point 3, and usually the temperature fluctuates in that separation region. The pressure is continually recovered from point 4 to point 5 to complete the

whole turn of the fluid through the elbow. However, the damage of the elbow is created in the region of point 2 to point 3, and point 3 to point 4, which not only has cavitation, but also temperature turbulence fatigue, which causes temperature stress fatigue and also chemical stress fatigue.

From this excerpt, it becomes clear that the inclusion of a perforation even in the vicinity of the elbow of *Cheng* (US 5,197,509) which would form "an acoustic connection between the interior of the conduit and the surrounding atmosphere" as recited in Applicant's claim 1 {or perforations or apertures 2 as disclosed in Fig. 2 of *Fuhrmann* (FR 2751375)} would accentuate the negative effects of cavitation and mixed-phase turbulent fluid at an elbow as described in the background of *Cheng* (US 5,197,509) with respect to the prior art as described in col. 1, lines 11-40:

"Turbulence created in pipe elbows causes increased erosion, noise, vibration, and stress cracking. If an elbow is located too close to a check valve, it can cause chattering and damage to the valve seat. In the case of a nuclear power plant, it can threaten the safety of the plant. In a condenser cooling system, the turbulence causes uneven flow in the cooling water box, in turn reducing the heat transfer effectiveness. Erosion of an elbow in a wet steam line or in refinery piping carrying catalyst particulates can cause unexpected down time. In nuclear power plants, sometimes a double blanket "tee" is used to dampen the fluid impact during turns. Others have used a Vortex ball to absorb the impact energy in areas which normally have a high rate of erosion. Thickening the wall and using stainless steel 316, Titanium and Chrome-Moly are common patch-up solutions currently. Other methods of turning vanes in wind tunnels and critical flow systems are required to eliminate some of the large-scale turbulence, but small-scale turbulence still exists. The methods in prior art may make the pipe system more safe or elongate the maintenance period, but the inherent problems of elbow-induced turbulence have never been removed. This is a very complicated fluid mechanics problem which involves potential flow, compressibility, and viscous flow. The turbulence is a result of rotation of the flow by the elbow, with the law of nature trying to return to a homogenized state in a short time. The prior art "fixes" did not address the cause of the turbulence; hence, have not been very successful."

Regarding the Action's rejection of claim 8, it is admitted by the Office that *Fuhrmann* (FR 2751375) fails to disclose the recited subject matter, but “[t]he Examiner concludes” from certain statements in Applicant's disclosure “that there is no critical need for a fabric covering.” Still further, Applicant is confounded by the Action's conclusion that “[i]t would have been an obvious matter of design choice to employ a sound permeable fabric covering, since applicant has not disclosed that the sound permeable fabric covering solves any stated critical problem and it appears that the invention would perform equally well with or without the sound permeable fabric covering.” Initially, in attempting to research this basis for rejection, Applicant has performed an electronic search of the MPEP and failed to discover this standard (failure to state the critical problem) for rejection. Moreover, Applicant has been unable to find basis in either Rule or Law for such a rejection. In fact, the MPEP repeatedly cautions in Chapter 700 that rejections should not be conclusory. The fact of the matter is that Applicant has disclosed the structure recited in claim 8 as a beneficial aspect of the disclosed invention, the feature has not been shown by the Office in prior art, and therefore the claim should be allowable.

Serial No.: 10/604,848

Confirmation No.: 1847

Applicant: WAHLSTRÖM, Gert-Ove *et al.*

Atty. Ref.: 07589.0127.PCUS00

The undersigned representative requests any extension of time that may be deemed necessary to further the prosecution of this application.

The undersigned representative authorizes the Commissioner to charge any additional fees under 37 C.F.R. 1.16 or 1.17 that may be required, or credit any overpayment, to Deposit Account No. 14-1437, Order No. 07589.0127.PCUS00.

In order to facilitate the resolution of any issues or questions presented by this paper, the Examiner should directly contact the undersigned by phone to further the discussion.

Respectfully submitted,



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Exhibit "A"

706.02

MANUAL OF PATENT EXAMINING PROCEDURE

(C) a method of using a product produced by a process defined by subparagraph (A) or (B), or a combination of subparagraphs (A) and (B).

(c) Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

By far the most frequent ground of rejection is on the ground of unpatentability in view of the prior art, that is, that the claimed subject matter is either not novel under 35 U.S.C. 102, or else it is obvious under 35 U.S.C. 103. The language to be used in rejecting claims should be unequivocal. See MPEP § 707.07(d).

CHOICE OF PRIOR ART; BEST AVAILABLE

Prior art rejections should ordinarily be confined strictly to the best available art. Exceptions may properly be made, for example, where:

(A) the propriety of a 35 U.S.C. 102 or 103 rejection depends on a particular interpretation of a claim;

(B) a claim is met only in terms by a reference which does not disclose the inventive concept involved; or

(C) the most pertinent reference seems likely to be antedated by a 37 CFR 1.131 affidavit or declaration.

Such rejections should be backed up by the best other art rejections available. Merely cumulative rejections, i.e., those which would clearly fall if the primary rejection were not sustained, should be avoided.

See also MPEP § 707.05.

REEXAMINATION

For scope of rejections in reexamination proceedings see MPEP § 2258.

DISTINCTION BETWEEN 35 U.S.C. 102 AND 103

The distinction between rejections based on 35 U.S.C. 102 and those based on 35 U.S.C. 103 should be kept in mind. Under the former, the claim is anticipated by the reference. No question of obviousness is present. In other words, for anticipation under 35

U.S.C. 102, the reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present. Whereas, in a rejection based on 35 U.S.C. 103, the reference teachings must somehow be modified in order to meet the claims. The modification must be one which would have been obvious to one of ordinary skill in the art at the time the invention was made. See MPEP § 2131 - § 2146 for guidance on patentability determinations under 35 U.S.C. 102 and 103.

DETERMINING THE EFFECTIVE FILING DATE OF THE APPLICATION

The effective filing date of a U.S. application may be determined as follows:

(A) If the application is a continuation or divisional of one or more earlier U.S. applications and if the requirements of 35 U.S.C. 120 have been satisfied, the effective filing date is the same as the earliest filing date in the line of continuation or divisional applications.

(B) If the application is a continuation-in-part of an earlier U.S. application, any claims in the new application not supported by the specification and claims of the parent application have an effective filing date equal to the filing date of the new application. Any claims which are fully supported under 35 U.S.C. 112 by the earlier parent application have the effective filing date of that earlier parent application.

(C) If the application claims foreign priority under 35 U.S.C. 119(a)-(d), the effective filing date is the filing date of the U.S. application, unless situation (A) or (B) as set forth above applies. The filing date of the foreign priority document is not the effective filing date, although the filing date of the foreign priority document may be used to overcome certain references. See MPEP § 706.02(b) and § 2136.05.

(D) If the application is entitled to priority under 35 U.S.C. 119(e) from a provisional application, the effective filing date is the filing date of the provisional application.

See MPEP § 1893.03(b) for determining the effective filing date of an application filed under 35 U.S.C. 371. See MPEP § 201.11(a) and § 1895 for determining the effective filing date of a continuation, divisional, or continuation-in-part of a PCT application